



The role ORAMA results will play to GeoERA Projects - The Future -

Antje WITTENBERG, BGR | Theme Coordinator GeoERA Raw Materials

Raw Materials Week 2019, Satellite Event: ORAMA - GeoERA Raw Materials, Brussels, 22.11.2019



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731166



Main objective is the contribution to

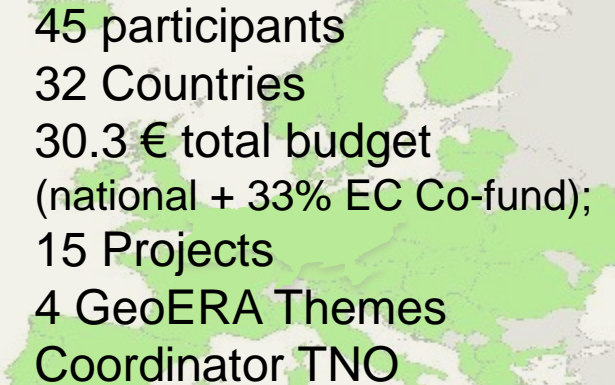
- the optimal use and management of the subsurface;

Key ambition is to add to:

- an improved integrated and efficient subsurface management, and
- more responsible publicly accepted exploitation and use of the subsurface.

Four GeoERA-Themes:

- Groundwater
- GeoEnergy
- Information Platform
- Raw Materials



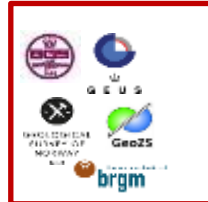
45 participants
32 Countries
30.3 € total budget
(national + 33% EC Co-fund);
15 Projects
4 GeoERA Themes
Coordinator TNO



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Forecast, prospection, exploration and **harmonized mineral maps and datasets** based on case studies



- Atlas and properties directory (ID) of European Ornamental Stones accompanied by ornamental stone heritage information;
- Characterisation of **deposit types** and related trace elements (by-product potential);
- Analyse **present-day exploration and exploitation status** in terms of regulation, legislation, environmental impacts, exploitation and future directions. (Atlantic, Mediterranean, Baltic and Black Sea)
- **Strategic mineral maps** (target oriented energy transition, conflict-free, by-products)
- **Inventory** of (key) occurrences and resources
- **Minerals Yearbook**



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First class knowledge on Europe's Raw Material Potential:

- ➔ New and harmonised data on primary raw materials;
- ➔ Combining of multi-method geochemical, geophysical, remote-sensing geophysical data, geological data, geochemical data, petrological data (including mineralogical data);
- ➔ Basic data on mineral resources, including mineral deposit types; and
- ➔ Monitoring and project development tools for mineral resources and sustained subsurface usage;

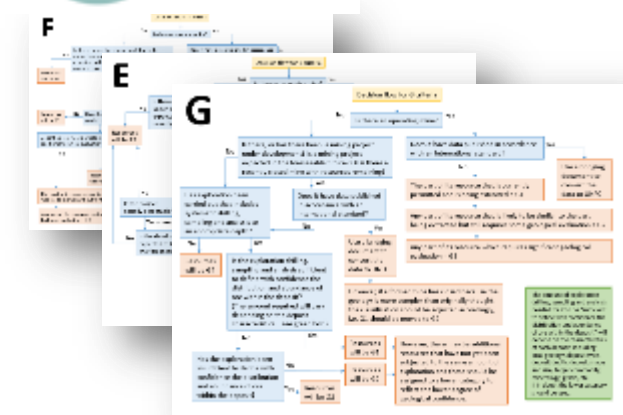
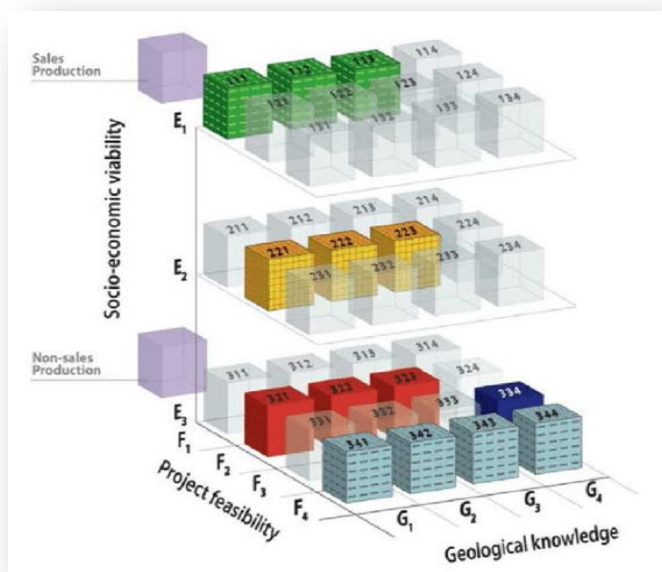
ORAMA – GeoERA common task
spatial data, data collection, statistics;
Monitoring,
harmonised reporting codes (UNFC)



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GeoERA Raw Material Projects will apply and test ORAMA decision flows for UNFC in various case studies and regions.



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Message

- Available information should be **easily accessible and understandable as well as reliable and of a proven quality**.
 - [...] great effort should be made in simplifying the aggregation / disaggregation of mineral commodities.
- Continue the practice for **developing the national level data service with sufficient and appropriate datasets**
 - [...] the user interface needs also to be developed [...] to ensure access to information on minerals [...].
- Also, critically, for mineral resources and reserves, a **common coding system** must be used.



Response

- GeoERA continuously improves user interfaces and visualization of data and information, expand repositories of supporting information within the EGD platform.
- Continue development and improvement of the information on national level, not only harmonising terms and structures, but also content
- UNFC will be taken further in more extensive tests of data models and a range of case studies



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The role ORAMA results will play to GeoERA Projects - the future -

To Be Continued by GeoERA Projects



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The role ORAMA results will play to MINTELL4EU - The Future -

Jørgen TULSTRUP, GEUS | Project Lead MINTELL4EU

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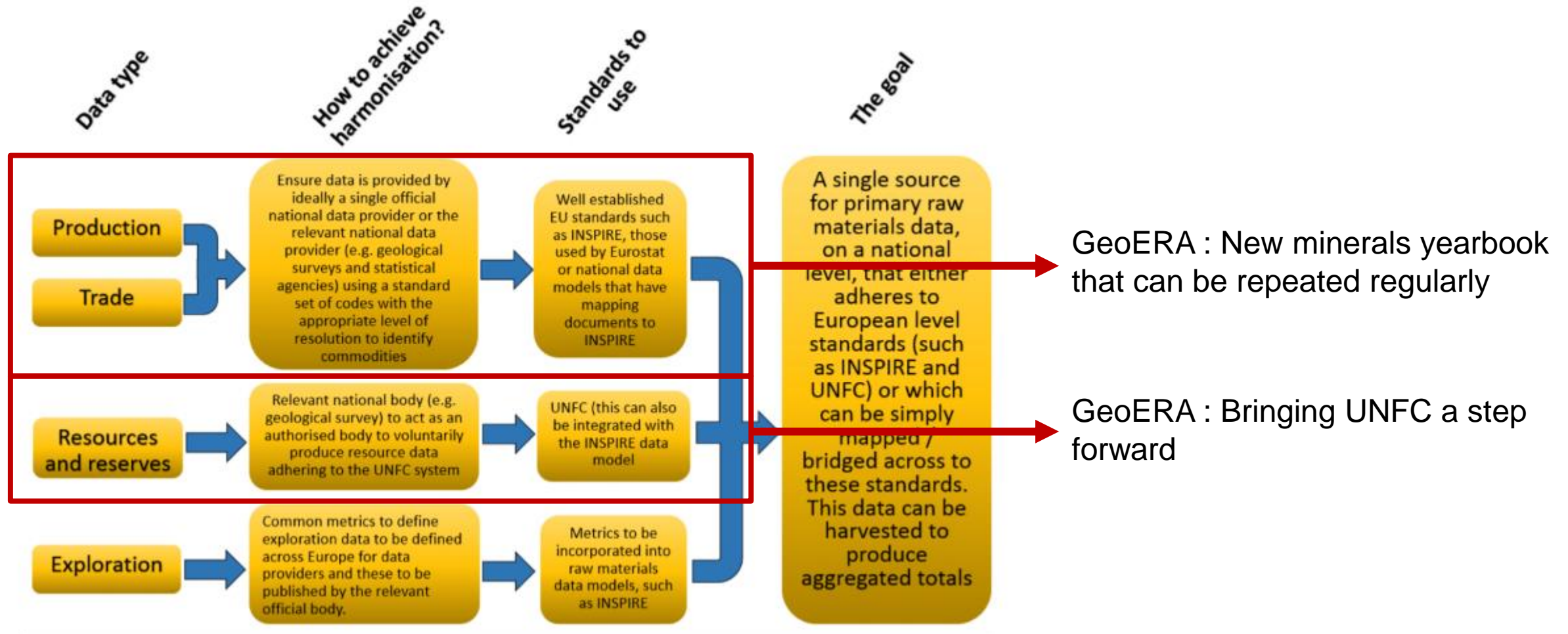


Figure 36, Summary of recommendations



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The role ORAMA results will play to FRAME Projects - The Future -

Daniel de OLIVEIRA, LNEG | Project Lead FRAME

Raw Materials Week 2019, Satellite Event: ORAMA - GeoERA Raw Materials, Brussels, 22.11.2019

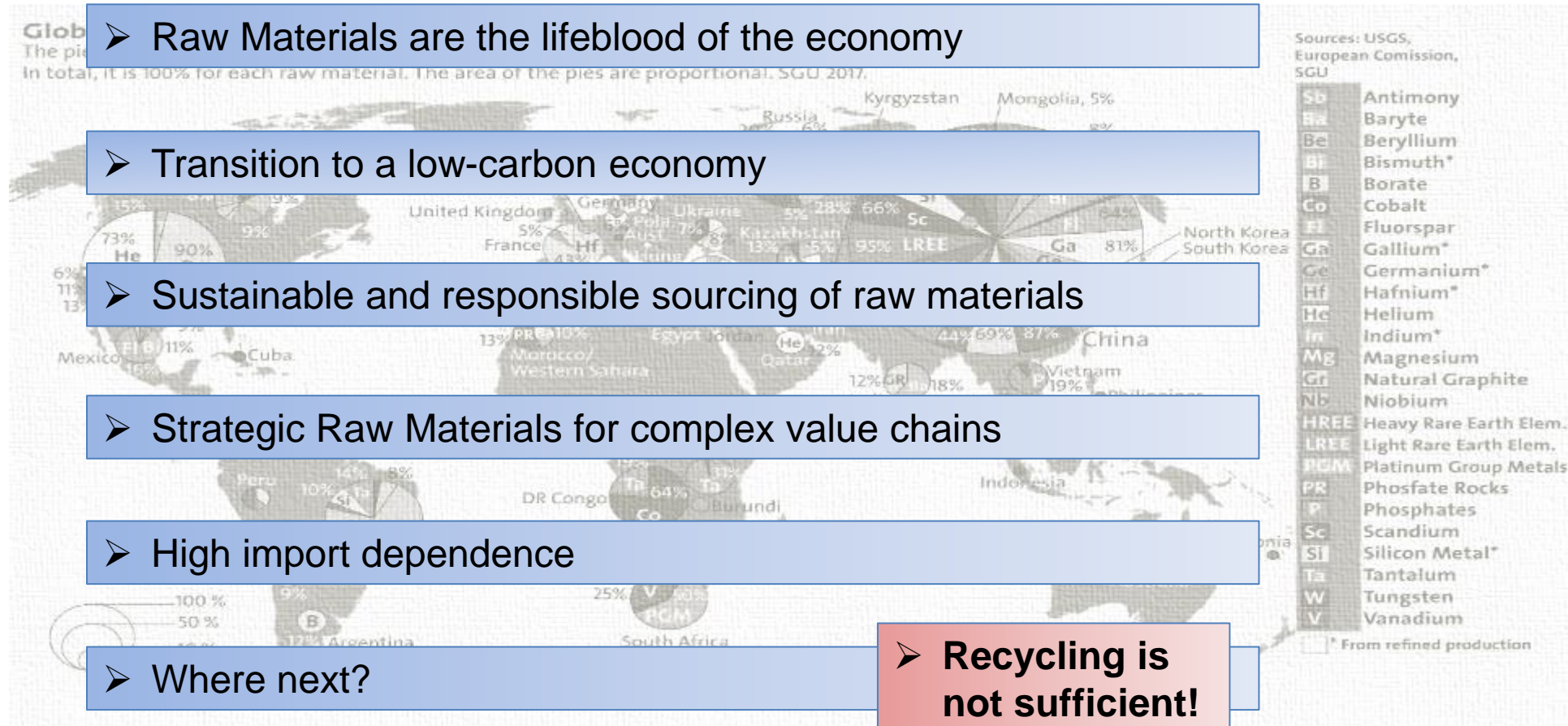


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Challenges

- Raw Materials are the lifeblood of the economy
- Transition to a low-carbon economy
- Sustainable and responsible sourcing of raw materials
- Strategic Raw Materials for complex value chains
- High import dependence
- Where next?



FRAME Objectives

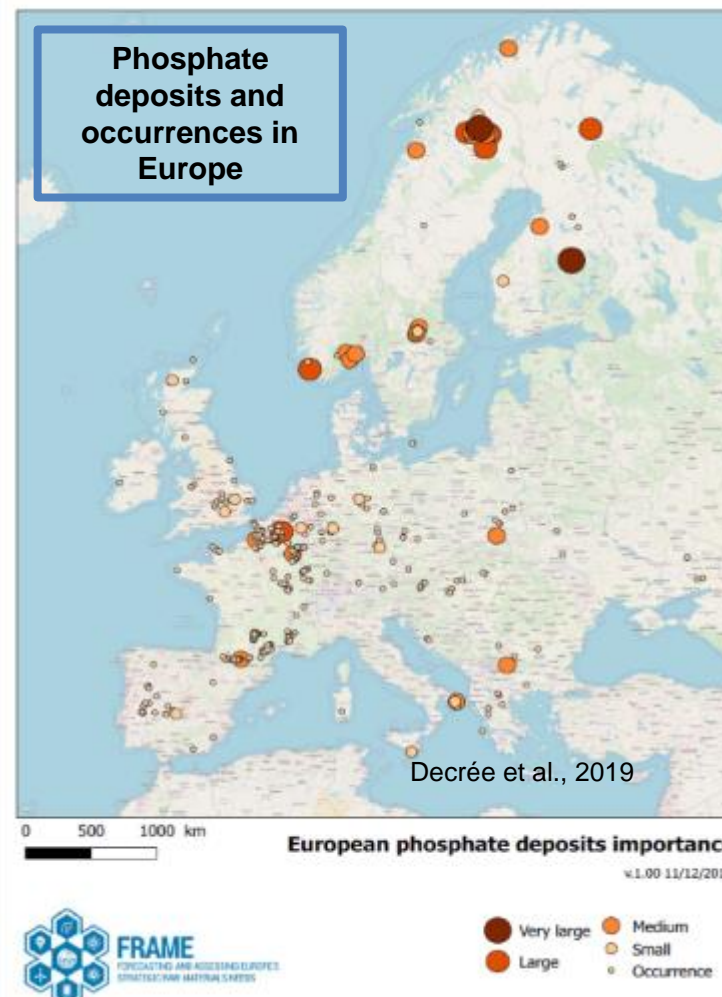
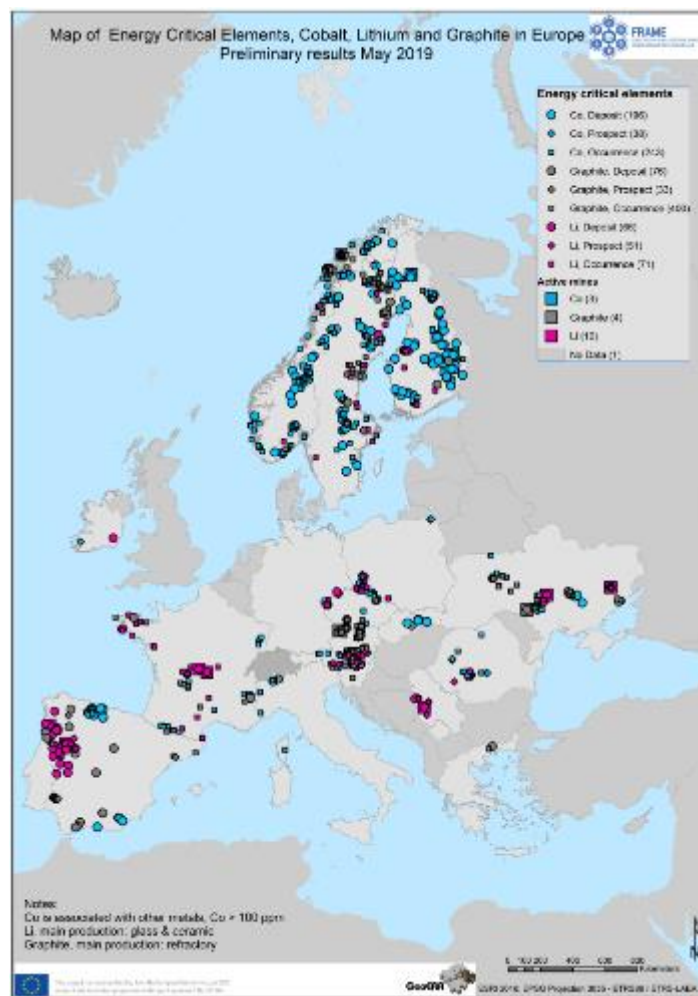
- Research the critical and strategic raw materials in Europe
- Build on previously + currently developed pan-European and national databases
- Expand SCRM knowledge through a compilation of mineral potential and metallogenic areas
- Predictive targeting based on GIS exploration tools
- Secondary resources - historical mining wastes
- Sustainable and responsible sourcing of raw materials



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FRAME – Progress



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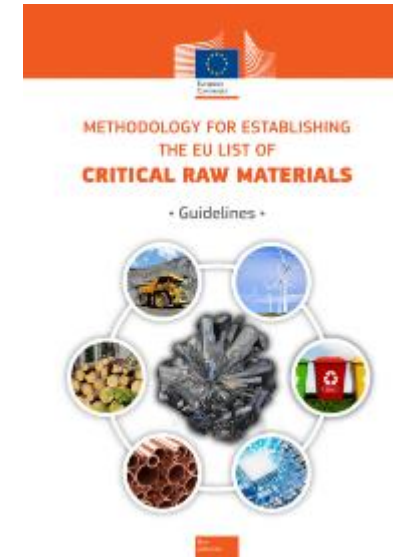
Commission priorities

Circular Economy

Battery Initiative



Critical Raw Materials List



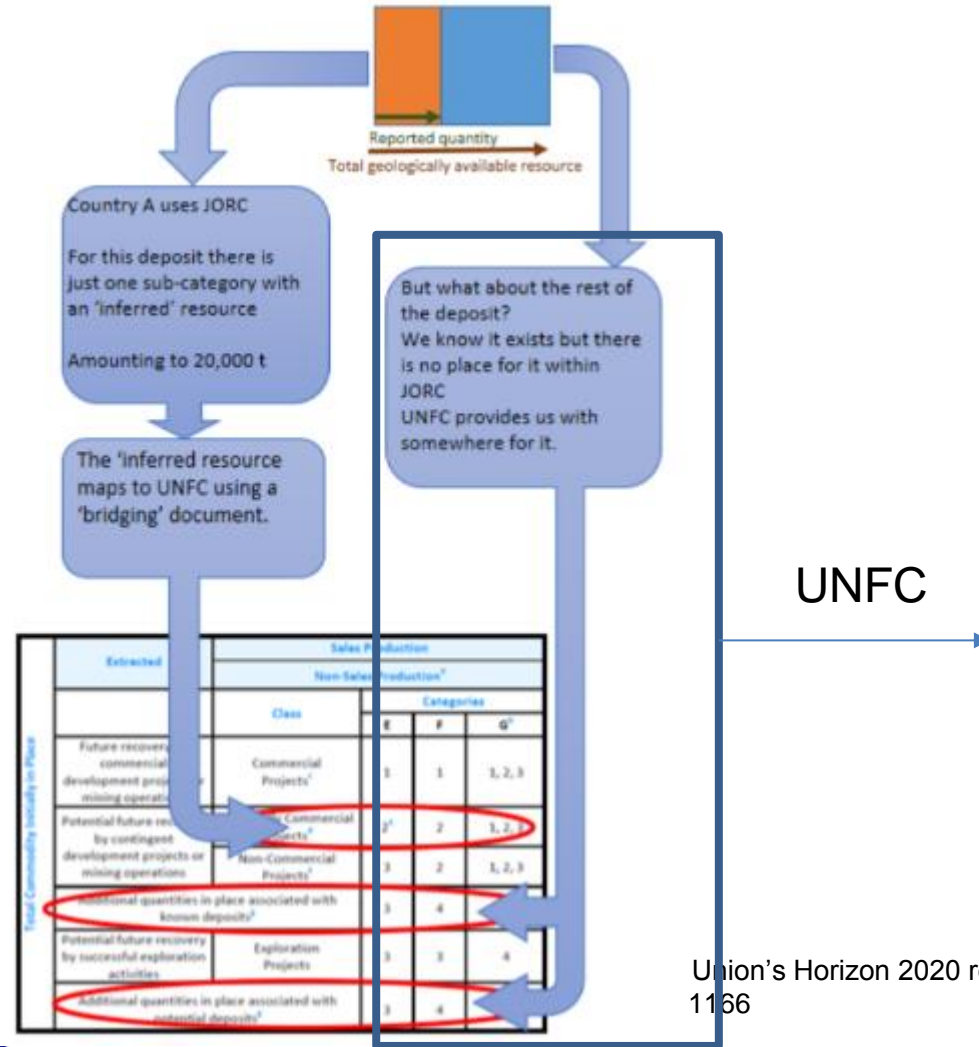
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«It is also important to remember that quoted figures for ‘resources’ or ‘reserves’, or even ‘endowment’ or ‘inventory’, **do not represent ‘all there is’** in the Earth because even in Europe undiscovered deposits remain»



«very little data for resources that are currently uneconomic, or for which the extractive industry is not actively exploring. However, an absence of data does not mean resources are absent and these data gaps must be clearly identified. **National geological surveys may be able to fill some of these gaps**»

Knowing the unknowns: the harmonisation, data collection and other research from previous projects and GeoEra will make a solid foundation for doing the next step – defining «all there is» in European territory, or «all we can possibly develop»





MINDeSEA

Seabed Mineral Deposits in European Seas:
Metallogeny and Geological Potential for
Strategic and Critical Raw Materials

The role ORAMA results will play to MINDeSEA - The Future -

Javier GONZÁLEZ SANZ | Project Lead MINDeSEA

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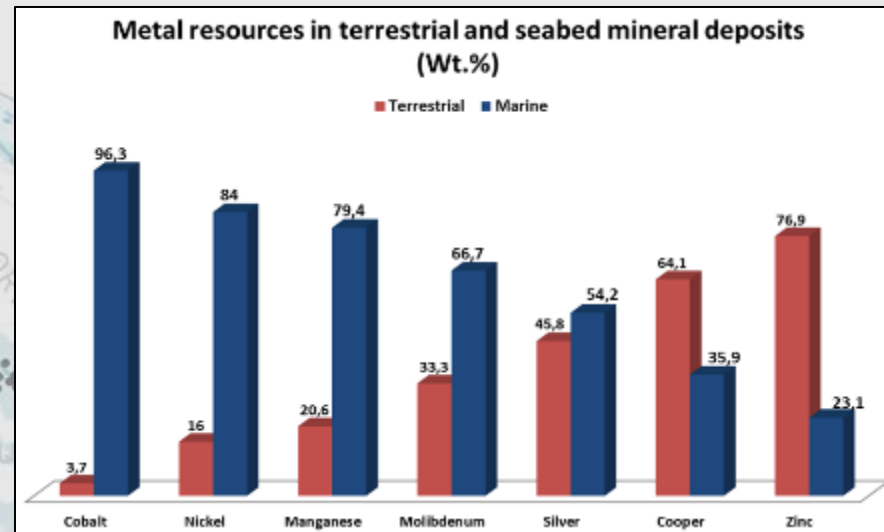
Challenge

Seafloor deposits:

the most important yet least explored resource of CRM

By 2030, 10% of the world's minerals, including cobalt, copper and zinc could come from the ocean floors.

Global annual turnover of marine mineral mining can be expected to grow from virtually nothing to **€10 billion by 2030**.



Source: USGS

2017 CRMs (27)

Antimony	Fluorspar	LREEs	Phosphorus
Baryte	Gallium	Magnesium	Scandium
Beryllium	Germanium	Natural graphite	Silicon metal
Bismuth	Hafnium	Natural rubber	Tantalum
Borate	Helium	Niobium	Tungsten
Cobalt	HREEs	PGMs	Vanadium
Coking coal	Indium	Phosphate rock	

Source: EC



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- The **specific aim** of MINDeSEA is to establish the metallogenic context for different seabed mineral deposits with economic potential in the pan-European setting.

Objectives

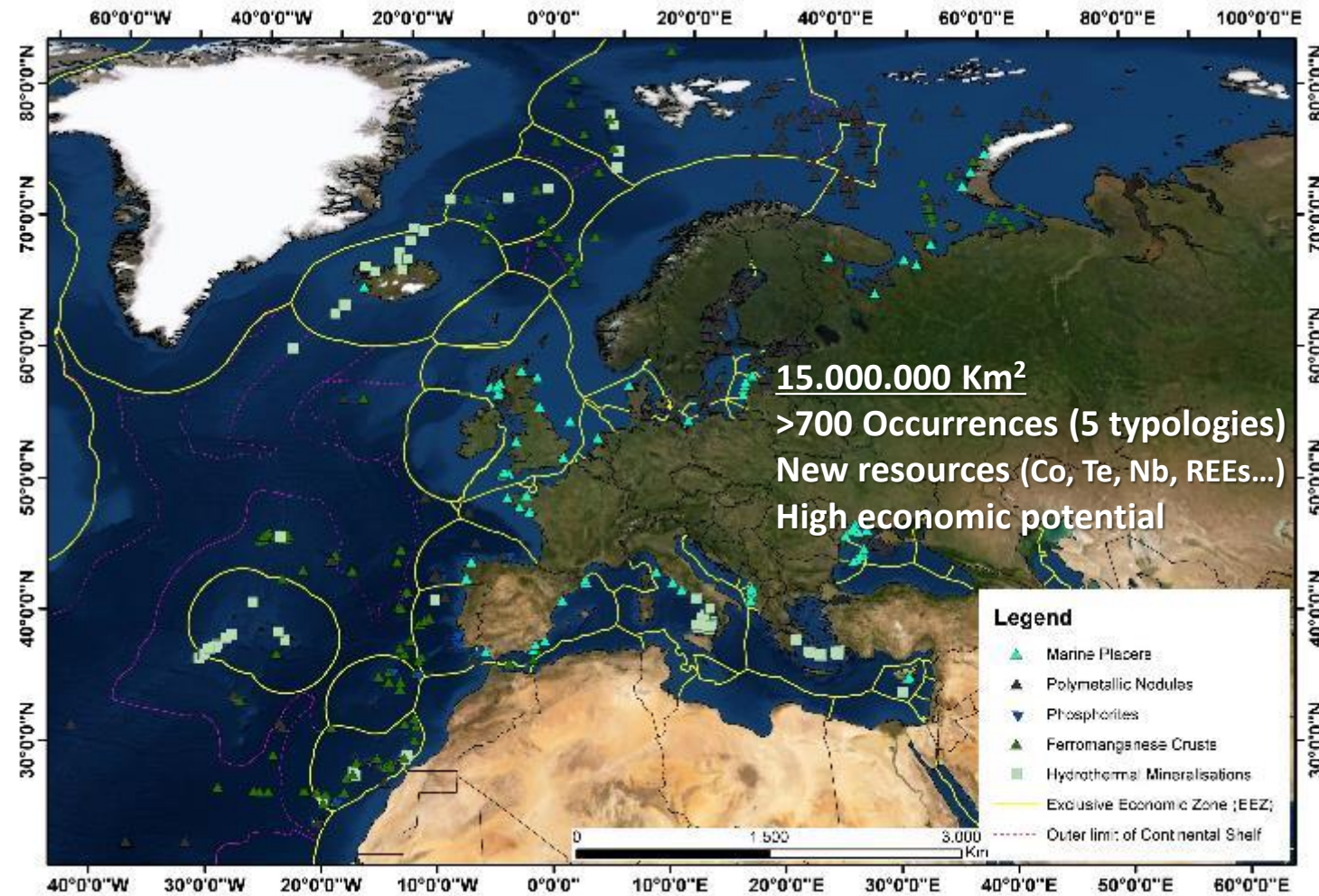
1. Characterise **deposit types**.
2. Characterise the **trace element** content of the deposit type including **CRM**.
3. Identify the principal **metallogenic provinces**.
4. Develop **harmonized mineral maps and datasets** of seabed deposits incorporating GSO datasets, along with mineral-potential and prospectivity maps.
5. Demonstrate how the **case study** results can be used in off-shore mineral exploration.
6. Analyse **present-day exploration and exploitation status** in terms of regulation, legislation, environmental impacts, exploitation and future directions.
7. Demonstrate **efficiency of a pan-European research approach** to understanding seabed minerals and modes of exploration.



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Database and Maps Progresses



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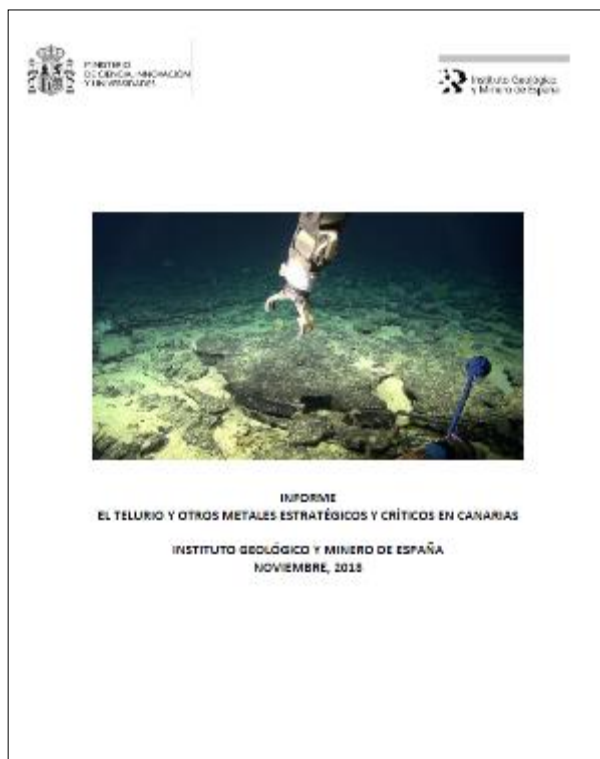
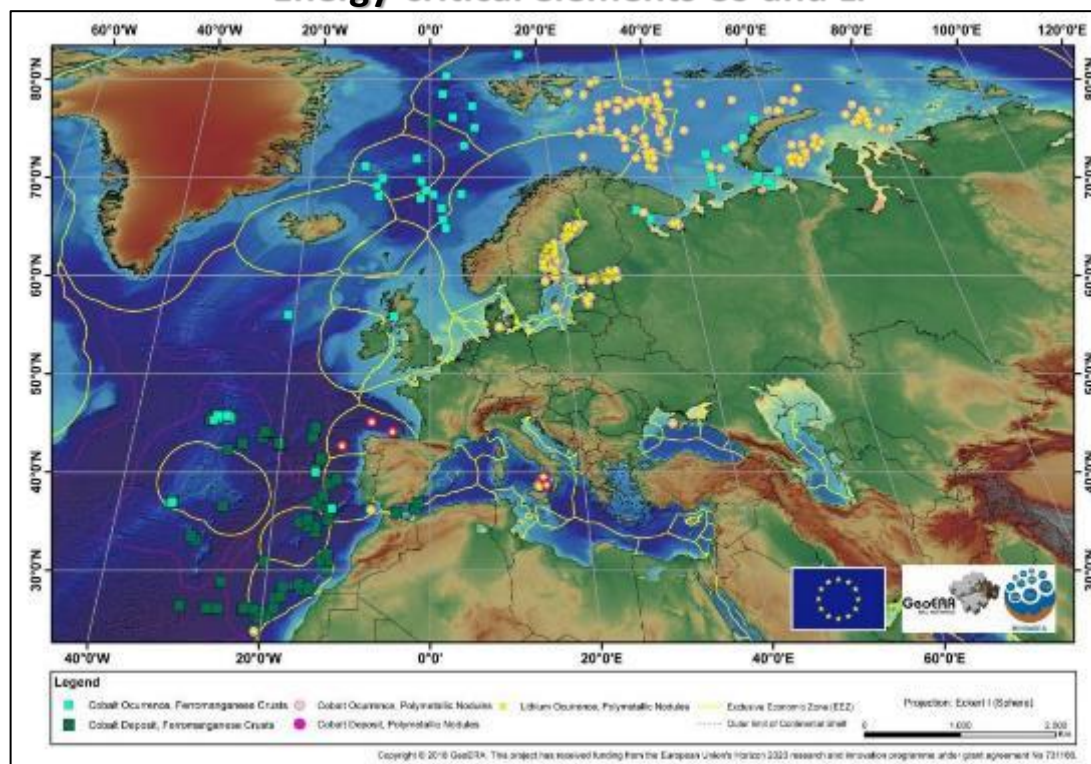




Assessment to EC

- Investigating SCRM from European seas
- Proposing areas for responsible resourcing
- Providing info on management and Marine Spatial Planning

Energy-critical elements Co and Li



Reported to DG MARE and DG GROW



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Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

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THANK YOU FOR THE INTEREST



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